

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Alderson, Mark R.
Goodwin, Raymond G.
Smith, Craig A.
- (ii) TITLE OF INVENTION: Cytokine Designated 4-1BB Ligand And
Human Receptor That Binds Thereto
- (iii) NUMBER OF SEQUENCES: 15
- (iv) CORRESPONDENCE ADDRESS:
 - (A) ADDRESSEE: Kathryn A. Seese, Immunex Corporation
 - (B) STREET: 51 University Street
 - (C) CITY: Seattle
 - (D) STATE: Washington
 - (E) COUNTRY: US
 - (F) ZIP: 98101
- (v) COMPUTER READABLE FORM:
 - (A) MEDIUM TYPE: Floppy disk
 - (B) COMPUTER: IBM PC compatible
 - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
 - (D) SOFTWARE: PatentIn Release #1.0, Version #1.25
- (vi) CURRENT APPLICATION DATA:
 - (A) APPLICATION NUMBER:
 - (B) FILING DATE:
 - (C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
 - (A) NAME: Seese, Kathryn A.
 - (B) REGISTRATION NUMBER: 32,172
 - (C) REFERENCE/DOCKET NUMBER: 2801-WO
- (ix) TELECOMMUNICATION INFORMATION:
 - (A) TELEPHONE: (206) 587-0430
 - (B) TELEFAX: (206) 233-0644

(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1254 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA to mRNA
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (vii) IMMEDIATE SOURCE:
 - (B) CLONE: murine 4-1BB-L

(ix) FEATURE:

(A) NAME/KEY: CDS
(B) LOCATION: 53..979

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

AGCCTATAAA GCACGGGCAC TGGCGGGAGA CGTGCACTGA CCGACCGTGG TA ATG	55
Met	
1	
GAC CAG CAC ACA CTT GAT GTG GAG GAT ACC GCG GAT GCC AGA CAT CCA	103
Asp Gln His Thr Leu Asp Val Glu Asp Thr Ala Asp Ala Arg His Pro	
5 10 15	
GCA GGT ACT TCG TGC CCC TCG GAT GCG GCG CTC CTC AGA GAT ACC GGG	151
Ala Gly Thr Ser Cys Pro Ser Asp Ala Ala Leu Leu Arg Asp Thr Gly	
20 25 30	
CTC CTC GCG GAC GCT GCG CTC CTC TCA GAT ACT GTG CGC CCC ACA AAT	199
Leu Leu Ala Asp Ala Ala Leu Leu Ser Asp Thr Val Arg Pro Thr Asn	
35 40 45	
GCC GCG CTC CCC ACG GAT GCT GCC TAC CCT GCG GTT AAT GTT CGG GAT	247
Ala Ala Leu Pro Thr Asp Ala Ala Tyr Pro Ala Val Asn Val Arg Asp	
50 55 60 65	
CGC GAG GCC GCG TGG CCG CCT GCA CTG AAC TTC TGT TCC CGC CAC CCA	295
Arg Glu Ala Ala Trp Pro Pro Ala Leu Asn Phe Cys Ser Arg His Pro	
70 75 80	
AAG CTC TAT GGC CTA GTC GCT TTG GTT TTG CTG CTT CTG ATC GCC GCC	343
Lys Leu Tyr Gly Leu Val Ala Leu Val Leu Leu Leu Leu Ile Ala Ala	
85 90 95	
TGT GTT CCT ATC TTC ACC CGC ACC GAG CCT CGG CCA GCG CTC ACA ATC	391
Cys Val Pro Ile Phe Thr Arg Thr Glu Pro Arg Pro Ala Leu Thr Ile	
100 105 110	
ACC ACC TCG CCC AAC CTG GGT ACC CGA GAG AAT AAT GCA GAC CAG GTC	439
Thr Thr Ser Pro Asn Leu Gly Thr Arg Glu Asn Asn Ala Asp Gln Val	
115 120 125	
ACC CCT GTT TCC CAC ATT GGC TGC CCC AAC ACT ACA CAA CAG GGC TCT	487
Thr Pro Val Ser His Ile Gly Cys Pro Asn Thr Thr Gln Gln Gly Ser	
130 135 140 145	
CCT GTG TTC GCC AAG CTA CTG GCT AAA AAC CAA GCA TCG TTG TGC AAT	535
Pro Val Phe Ala Lys Leu Leu Ala Lys Asn Gln Ala Ser Leu Cys Asn	
150 155 160	
ACA ACT CTG AAC TGG CAC AGC CAA GAT GGA GCT GGG AGC TCA TAC CTA	583
Thr Thr Leu Asn Trp His Ser Gln Asp Gly Ala Gly Ser Ser Tyr Leu	
165 170 175	
TCT CAA GGT CTG AGG TAC GAA GAA GAC AAA AAG GAG TTG GTG GTA GAC	631
Ser Gln Gly Leu Arg Tyr Glu Glu Asp Lys Lys Glu Leu Val Val Asp	
180 185 190	

AGT CCC GGG CTC TAC TAC GTA TTT TTG GAA CTG AAG CTC AGT CCA ACA 679
 Ser Pro Gly Leu Tyr Tyr Val Phe Leu Glu Leu Lys Leu Ser Pro Thr
 195 200 205

TTC ACA AAC ACA GGC CAC AAG GTG CAG GGC TGG GTC TCT CTT GTT TTG 727
 Phe Thr Asn Thr Gly His Lys Val Gln Gly Trp Val Ser Leu Val Leu
 210 215 220 225

CAA GCA AAG CCT CAG GTA GAT GAC TTT GAC AAC TTG GCC CTG ACA GTG 775
 Gln Ala Lys Pro Gln Val Asp Asp Phe Asp Asn Leu Ala Leu Thr Val
 230 235 240

GAA CTG TTC CCT TGC TCC ATG GAG AAC AAG TTA GTG GAC CGT TCC TGG 823
 Glu Leu Phe Pro Cys Ser Met Glu Asn Lys Leu Val Asp Arg Ser Trp
 245 250 255

AGT CAA CTG TTG CTC CTG AAG GCT GGC CAC CGC CTC AGT GTG GGT CTG 871
 Ser Gln Leu Leu Leu Lys Ala Gly His Arg Leu Ser Val Gly Leu
 260 265 270

AGG GCT TAT CTG CAT GGA GCC CAG GAT GCA TAC AGA GAC TGG GAG CTG 919
 Arg Ala Tyr Leu His Gly Ala Gln Asp Ala Tyr Arg Asp Trp Glu Leu
 275 280 285

TCT TAT CCC AAC ACC ACC AGC TTT GGA CTC TTT CTT GTG AAA CCC GAC 967
 Ser Tyr Pro Asn Thr Thr Ser Phe Gly Leu Phe Leu Val Lys Pro Asp
 290 295 300 305

AAC CCA TGG GAA TGAGAACTAT CCTTCTGTG ACTCCTAGTT GCTAAGTCCT 1019
 Asn Pro Trp Glu

CAAGCTGCTA TGTTTTATGG GGTCTGAGCA GGGGTCCCTT CCATGACTTT CTCTTGTCCT 1079

TAAGTGGACT TGGTATTTAT TCTGAGCATA GCTCAGACAA GACTTTATAT AATTCAC TAG 1139

ATAGCATTAG TAAACTGCTG GGCAGCTGCT AGATAAAAAA AAATTTCTAA ATCAAAGTTT 1199

ATATTTATAT TAATATATAA AAATAAATGT GTTTGTAAAT AAAAAAAAAA AAAAA 1254

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 309 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Met Asp Gln His Thr Leu Asp Val Glu Asp Thr Ala Asp Ala Arg His
 1 5 10 15

Pro Ala Gly Thr Ser Cys Pro Ser Asp Ala Ala Leu Leu Arg Asp Thr
 20 25 30

Gly Leu Leu Ala Asp Ala Ala Leu Leu Ser Asp Thr Val Arg Pro Thr
 35 40 45

Asn Ala Ala Leu Pro Thr Asp Ala Ala Tyr Pro Ala Val Asn Val Arg
 50 55 60
 Asp Arg Glu Ala Ala Trp Pro Pro Ala Leu Asn Phe Cys Ser Arg His
 65 70 75 80
 Pro Lys Leu Tyr Gly Leu Val Ala Leu Val Leu Leu Leu Leu Ile Ala
 85 90 95
 Ala Cys Val Pro Ile Phe Thr Arg Thr Glu Pro Arg Pro Ala Leu Thr
 100 105 110
 Ile Thr Thr Ser Pro Asn Leu Gly Thr Arg Glu Asn Asn Ala Asp Gln
 115 120 125
 Val Thr Pro Val Ser His Ile Gly Cys Pro Asn Thr Thr Gln Gln Gly
 130 135 140
 Ser Pro Val Phe Ala Lys Leu Leu Ala Lys Asn Gln Ala Ser Leu Cys
 145 150 155 160
 Asn Thr Thr Leu Asn Trp His Ser Gln Asp Gly Ala Gly Ser Ser Tyr
 165 170 175
 Leu Ser Gln Gly Leu Arg Tyr Glu Glu Asp Lys Lys Glu Leu Val Val
 180 185 190
 Asp Ser Pro Gly Leu Tyr Tyr Val Phe Leu Glu Leu Lys Leu Ser Pro
 195 200 205
 Thr Phe Thr Asn Thr Gly His Lys Val Gln Gly Trp Val Ser Leu Val
 210 215 220
 Leu Gln Ala Lys Pro Gln Val Asp Asp Phe Asp Asn Leu Ala Leu Thr
 225 230 235 240
 Val Glu Leu Phe Pro Cys Ser Met Glu Asn Lys Leu Val Asp Arg Ser
 245 250 255
 Trp Ser Gln Leu Leu Leu Leu Lys Ala Gly His Arg Leu Ser Val Gly
 260 265 270
 Leu Arg Ala Tyr Leu His Gly Ala Gln Asp Ala Tyr Arg Asp Trp Glu
 275 280 285
 Leu Ser Tyr Pro Asn Thr Thr Ser Phe Gly Leu Phe Leu Val Lys Pro
 290 295 300
 Asp Asn Pro Trp Glu
 305

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1619 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA to mRNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(vii) IMMEDIATE SOURCE:
 (B) CLONE: human 4-1BB-L(7A)

(ix) FEATURE:
 (A) NAME/KEY: CDS
 (B) LOCATION: 4..765

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GTC	ATG	GAA	TAC	GCC	TCT	GAC	GCT	TCA	CTG	GAC	CCC	GAA	GCC	CCG	TGG	48
Met	Glu	Tyr	Ala	Ser	Asp	Ala	Ser	Leu	Asp	Pro	Glu	Ala	Pro	Trp		
1				5					10					15		
CCT	CCC	GCG	CCC	CGC	GCT	CGC	GCC	TGC	CGC	GTA	CTG	CCT	TGG	GCC	CTG	96
Pro	Pro	Ala	Pro	Arg	Ala	Arg	Ala	Cys	Arg	Val	Leu	Pro	Trp	Ala	Leu	
			20					25						30		
GTC	GCG	GGG	CTG	CTG	CTG	CTG	CTG	CTG	CTC	GCT	GCC	GCC	TGC	GCC	GTC	144
Val	Ala	Gly	Leu	Leu	Leu	Leu	Leu	Leu	Leu	Ala	Ala	Ala	Cys	Ala	Val	
			35					40					45			
TTC	CTC	GCC	TGC	CCC	TGG	GCC	GTG	TCC	GGG	GCT	CGC	GCC	TCG	CCC	GGC	192
Phe	Leu	Ala	Cys	Pro	Trp	Ala	Val	Ser	Gly	Ala	Arg	Ala	Ser	Pro	Gly	
		50					55					60				
TCC	GCG	GCC	AGC	CCG	AGA	CTC	CGC	GAG	GGT	CCC	GAG	CTT	TCG	CCC	GAC	240
Ser	Ala	Ala	Ser	Pro	Arg	Leu	Arg	Glu	Gly	Pro	Glu	Leu	Ser	Pro	Asp	
		65				70					75					
GAT	CCC	GCC	GGC	CTC	TTG	GAC	CTG	CGG	CAG	GGC	ATG	TTT	GCG	CAG	CTG	288
Asp	Pro	Ala	Gly	Leu	Leu	Asp	Leu	Arg	Gln	Gly	Met	Phe	Ala	Gln	Leu	
80				85				90						95		
GTG	GCC	CAA	AAT	GTT	CTG	CTG	ATC	GAT	GGG	CCC	CTG	AGC	TGG	TAC	AGT	336
Val	Ala	Gln	Asn	Val	Leu	Leu	Ile	Asp	Gly	Pro	Leu	Ser	Trp	Tyr	Ser	
			100					105						110		
GAC	CCA	GGC	CTG	GCA	GGC	GTG	TCC	CTG	ACG	GGG	GGC	CTG	AGC	TAC	AAA	384
Asp	Pro	Gly	Leu	Ala	Gly	Val	Ser	Leu	Thr	Gly	Gly	Leu	Ser	Tyr	Lys	
			115					120					125			
GAG	GAC	ACG	AAG	GAG	CTG	GTG	GTG	GCC	AAG	GCT	GGA	GTC	TAC	TAT	GTC	432
Glu	Asp	Thr	Lys	Glu	Leu	Val	Val	Ala	Lys	Ala	Gly	Val	Tyr	Tyr	Val	
		130					135					140				
TTC	TTT	CAA	CTA	GAG	CTG	CGG	CGC	GTG	GTG	GCC	GGC	GAG	GGC	TCA	GGC	480
Phe	Phe	Gln	Leu	Glu	Leu	Arg	Arg	Val	Val	Ala	Gly	Glu	Gly	Ser	Gly	
		145				150					155					
TCC	GTT	TCA	CTT	GCG	CTG	CAC	CTG	CAG	CCA	CTG	CGC	TCT	GCT	GCT	GGG	528
Ser	Val	Ser	Leu	Ala	Leu	His	Leu	Gln	Pro	Leu	Arg	Ser	Ala	Ala	Gly	
160					165					170					175	

GCC GCC GCC CTG GCT TTG ACC GTG GAC CTG CCA CCC GCC TCC TCC GAG	576
Ala Ala Ala Leu Ala Leu Thr Val Asp Leu Pro Pro Ala Ser Ser Glu	
180 185 190	
GCT CGG AAC TCG GCC TTC GGT TTC CAG GGC CGC TTG CTG CAC CTG AGT	624
Ala Arg Asn Ser Ala Phe Gly Phe Gln Gly Arg Leu Leu His Leu Ser	
195 200 205	
GCC GGC CAG CGC CTG GGC GTC CAT CTT CAC ACT GAG GCC AGG GCA CGC	672
Ala Gly Gln Arg Leu Gly Val His Leu His Thr Glu Ala Arg Ala Arg	
210 215 220	
CAT GCC TGG CAG CTT ACC CAG GGC GCC ACA GTC TTG GGA CTC TTC CGG	720
His Ala Trp Gln Leu Thr Gln Gly Ala Thr Val Leu Gly Leu Phe Arg	
225 230 235	
GTG ACC CCC GAA ATC CCA GCC GGA CTC CCT TCA CCG AGG TCG GAA	765
Val Thr Pro Glu Ile Pro Ala Gly Leu Pro Ser Pro Arg Ser Glu	
240 245 250	
AACGCCCAGC CTGGGTGCAG CCCACCTGGA CAGAGTCCGA ATCCTACTCC ATCCTTCATG	826
GAGACCCCTG GTGCTGGGTC CCTGCTGCTT TCTCTACCTC AAGGGGCTTG GCAGGGGTCC	886
CTGCTGCTGA CCTCCCCTTG AGGACCCTCC TCACCCACTC CTTCCCCAAG TTGGACCTTG	946
ATATTTATTC TGAGCCTGAG CTCAGATAAT ATATTATATA TATTATATAT ATATATATAT	1006
TTCTATTTAA AGAGGATCCT GAGTTTGTGA ATGGACTTTT TTAGAGGAGT TGTTTTGGGG	1066
GGGGGGTCTT CGACATTGCC GAGGCTGGTC TTGAACTCCT GGACTIONAGAC GATCCTCCTG	1126
CCTCAGCCTC CCAAGCAACT GGGATTATC CTTTCTATTA ATTCATTGTA CTTATTTGCC	1186
TATTTGTGTG TATTGAGCAT CTGTAATGTG CCAGCATTGT GCCCAGGCTA GGGGGCTATA	1246
GAAACATCTA GAAATAGACT GAAAGAAAAT CTGAGTTATG GTAATACGTG AGGAATTTAA	1306
AGACTCATCC CCAGCCTCCA CCTCCTGTGT GATACTTGGG GGCTAGCTTT TTTCTTTCTT	1366
TCTTTTTTTTT GAGATGGTCT TGTCTGTCA ACCAGGCTAG AATGCAGCGG TGCAATCATG	1426
AGTCAATGCA GCCTCCAGCC TCGACCTCCC GAGGCTCAGG TGATCCTCCC ATCTCAGCCT	1486
CTCGAGTAGC TGGGACCACA GTTGTGTGCC ACCACACTTG GCTAACTTTT TAATTTTTTT	1546
GCGGAGACGG TATTGCTATG TTGCCAAGGT TGTTTACATG CCAGTACAAT TTATAATAAA	1606
CACTCATTTT TCC	1619

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 254 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

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Met Glu Tyr Ala Ser Asp Ala Ser Leu Asp Pro Glu Ala Pro Trp Pro
 1          5          10          15
Pro Ala Pro Arg Ala Arg Ala Cys Arg Val Leu Pro Trp Ala Leu Val
          20          25          30
Ala Gly Leu Leu Leu Leu Leu Leu Ala Ala Ala Cys Ala Val Phe
          35          40          45
Leu Ala Cys Pro Trp Ala Val Ser Gly Ala Arg Ala Ser Pro Gly Ser
 50          55          60
Ala Ala Ser Pro Arg Leu Arg Glu Gly Pro Glu Leu Ser Pro Asp Asp
 65          70          75          80
Pro Ala Gly Leu Leu Asp Leu Arg Gln Gly Met Phe Ala Gln Leu Val
          85          90          95
Ala Gln Asn Val Leu Leu Ile Asp Gly Pro Leu Ser Trp Tyr Ser Asp
          100          105          110
Pro Gly Leu Ala Gly Val Ser Leu Thr Gly Gly Leu Ser Tyr Lys Glu
          115          120          125
Asp Thr Lys Glu Leu Val Val Ala Lys Ala Gly Val Tyr Tyr Val Phe
          130          135          140
Phe Gln Leu Glu Leu Arg Arg Val Val Ala Gly Glu Gly Ser Gly Ser
          145          150          155          160
Val Ser Leu Ala Leu His Leu Gln Pro Leu Arg Ser Ala Ala Gly Ala
          165          170          175
Ala Ala Leu Ala Leu Thr Val Asp Leu Pro Pro Ala Ser Ser Glu Ala
          180          185          190
Arg Asn Ser Ala Phe Gly Phe Gln Gly Arg Leu Leu His Leu Ser Ala
          195          200          205
Gly Gln Arg Leu Gly Val His Leu His Thr Glu Ala Arg Ala Arg His
          210          215          220
Ala Trp Gln Leu Thr Gln Gly Ala Thr Val Leu Gly Leu Phe Arg Val
          225          230          235          240
Thr Pro Glu Ile Pro Ala Gly Leu Pro Ser Pro Arg Ser Glu
          245          250

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(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 768 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA to mRNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(vii) IMMEDIATE SOURCE:

(B) CLONE: mu4-1BB

(ix) FEATURE:

(A) NAME/KEY: CDS

(B) LOCATION: 1..768

(ix) FEATURE:

(A) NAME/KEY: mat_peptide

(B) LOCATION: 70..768

(ix) FEATURE:

(A) NAME/KEY: sig_peptide

(B) LOCATION: 1..69

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

ATG	GGA	AAC	AAC	TGT	TAC	AAC	GTG	GTG	GTC	ATT	GTG	CTG	CTG	CTA	GTG	48
Met	Gly	Asn	Asn	Cys	Tyr	Asn	Val	Val	Val	Ile	Val	Leu	Leu	Leu	Val	
-23			-20					-15					-10			
GGC	TGT	GAG	AAG	GTG	GGA	GCC	GTG	CAG	AAC	TCC	TGT	GAT	AAC	TGT	CAG	96
Gly	Cys	Glu	Lys	Val	Gly	Ala	Val	Gln	Asn	Ser	Cys	Asp	Asn	Cys	Gln	
		-5					1				5					
CCT	GGT	ACT	TTC	TGC	AGA	AAA	TAC	AAT	CCA	GTC	TGC	AAG	AGC	TGC	CCT	144
Pro	Gly	Thr	Phe	Cys	Arg	Lys	Tyr	Asn	Pro	Val	Cys	Lys	Ser	Cys	Pro	
10					15				20						25	
CCA	AGT	ACC	TTC	TCC	AGC	ATA	GGT	GGA	CAG	CCG	AAC	TGT	AAC	ATC	TGC	192
Pro	Ser	Thr	Phe	Ser	Ser	Ile	Gly	Gly	Gln	Pro	Asn	Cys	Asn	Ile	Cys	
				30					35					40		
AGA	GTG	TGT	GCA	GGC	TAT	TTC	AGG	TTC	AAG	AAG	TTT	TGC	TCC	TCT	ACC	240
Arg	Val	Cys	Ala	Gly	Tyr	Phe	Arg	Phe	Lys	Lys	Phe	Cys	Ser	Ser	Thr	
			45					50					55			
CAC	AAC	GCG	GAG	TGT	GAG	TGC	ATT	GAA	GGA	TTC	CAT	TGC	TTG	GGG	CCA	288
His	Asn	Ala	Glu	Cys	Glu	Cys	Ile	Glu	Gly	Phe	His	Cys	Leu	Gly	Pro	
		60					65					70				
CAG	TGC	ACC	AGA	TGT	GAA	AAG	GAC	TGC	AGG	CCT	GGC	CAG	GAG	CTA	ACG	336
Gln	Cys	Thr	Arg	Cys	Glu	Lys	Asp	Cys	Arg	Pro	Gly	Gln	Glu	Leu	Thr	
		75				80					85					
AAG	CAG	GGT	TGC	AAA	ACC	TGT	AGC	TTG	GGA	ACA	TTT	AAT	GAC	CAG	AAC	384
Lys	Gln	Gly	Cys	Lys	Thr	Cys	Ser	Leu	Gly	Thr	Phe	Asn	Asp	Gln	Asn	
90					95				100						105	
GGT	ACT	GGC	GTC	TGT	CGA	CCC	TGG	ACG	AAC	TGC	TCT	CTA	GAC	GGA	AGG	432
Gly	Thr	Gly	Val	Cys	Arg	Pro	Trp	Thr	Asn	Cys	Ser	Leu	Asp	Gly	Arg	
				110					115					120		

TCT GTG CTT AAG ACC GGG ACC ACG GAG AAG GAC GTG GTG TGT GGA CCC	480
Ser Val Leu Lys Thr Gly Thr Thr Glu Lys Asp Val Val Cys Gly Pro	
125 130 135	
CCT GTG GTG AGC TTC TCT CCC AGT ACC ACC ATT TCT GTG ACT CCA GAG	528
Pro Val Val Ser Phe Ser Pro Ser Thr Thr Ile Ser Val Thr Pro Glu	
140 145 150	
GGA GGA CCA GGA GGG CAC TCC TTG CAG GTC CTT ACC TTG TTC CTG GCG	576
Gly Gly Pro Gly Gly His Ser Leu Gln Val Leu Thr Leu Phe Leu Ala	
155 160 165	
CTG ACA TCG GCT TTG CTG CTG GCC CTG ATC TTC ATT ACT CTC CTG TTC	624
Leu Thr Ser Ala Leu Leu Leu Ala Leu Ile Phe Ile Thr Leu Leu Phe	
170 175 180 185	
TCT GTG CTC AAA TGG ATC AGG AAA AAA TTC CCC CAC ATA TTC AAG CAA	672
Ser Val Leu Lys Trp Ile Arg Lys Lys Phe Pro His Ile Phe Lys Gln	
190 195 200	
CCA TTT AAG AAG ACC ACT GGA GCA GCT CAA GAG GAA GAT GCT TGT AGC	720
Pro Phe Lys Lys Thr Thr Gly Ala Ala Gln Glu Glu Asp Ala Cys Ser	
205 210 215	
TGC CGA TGT CCA CAG GAA GAA GAA GGA GGA GGA GGA GGC TAT GAG CTG	768
Cys Arg Cys Pro Gln Glu Glu Glu Gly Gly Gly Gly Gly Tyr Glu Leu	
220 225 230	

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 256 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Met Gly Asn Asn Cys Tyr Asn Val Val Val Ile Val Leu Leu Leu Val	
-23 -20 -15 -10	
Gly Cys Glu Lys Val Gly Ala Val Gln Asn Ser Cys Asp Asn Cys Gln	
-5 1 5	
Pro Gly Thr Phe Cys Arg Lys Tyr Asn Pro Val Cys Lys Ser Cys Pro	
10 15 20 25	
Pro Ser Thr Phe Ser Ser Ile Gly Gly Gln Pro Asn Cys Asn Ile Cys	
30 35 40	
Arg Val Cys Ala Gly Tyr Phe Arg Phe Lys Lys Phe Cys Ser Ser Thr	
45 50 55	
His Asn Ala Glu Cys Glu Cys Ile Glu Gly Phe His Cys Leu Gly Pro	
60 65 70	
Gln Cys Thr Arg Cys Glu Lys Asp Cys Arg Pro Gly Gln Glu Leu Thr	
75 80 85	

Lys Gln Gly Cys Lys Thr Cys Ser Leu Gly Thr Phe Asn Asp Gln Asn
 90 95 100 105
 Gly Thr Gly Val Cys Arg Pro Trp Thr Asn Cys Ser Leu Asp Gly Arg
 110 115 120
 Ser Val Leu Lys Thr Gly Thr Thr Glu Lys Asp Val Val Cys Gly Pro
 125 130 135
 Pro Val Val Ser Phe Ser Pro Ser Thr Thr Ile Ser Val Thr Pro Glu
 140 145 150
 Gly Gly Pro Gly Gly His Ser Leu Gln Val Leu Thr Leu Phe Leu Ala
 155 160 165
 Leu Thr Ser Ala Leu Leu Leu Ala Leu Ile Phe Ile Thr Leu Leu Phe
 170 175 180 185
 Ser Val Leu Lys Trp Ile Arg Lys Lys Phe Pro His Ile Phe Lys Gln
 190 195 200
 Pro Phe Lys Lys Thr Thr Gly Ala Ala Gln Glu Glu Asp Ala Cys Ser
 205 210 215
 Cys Arg Cys Pro Gln Glu Glu Glu Gly Gly Gly Gly Gly Tyr Glu Leu
 220 225 230

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1415 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA to mRNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(vii) IMMEDIATE SOURCE:

- (B) CLONE: hu4-1BB

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 120..887

(ix) FEATURE:

- (A) NAME/KEY: mat_peptide
- (B) LOCATION: 189..884

(ix) FEATURE:

- (A) NAME/KEY: sig_peptide
- (B) LOCATION: 120..188

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

AGTGGAAAGT TCTCCGGCAG CCCTGAGATC TCAAGAGTGA CATTTGTGAG ACCAGCTAAT 60
TTGATTAAAA TTCTCTTGGA ATCAGCTTTG CTAGTATCAT ACCTGTGCCA GATTTCATC 119
ATG GGA AAC AGC TGT TAC AAC ATA GTA GCC ACT CTG TTG CTG GTC CTC 167
Met Gly Asn Ser Cys Tyr Asn Ile Val Ala Thr Leu Leu Leu Val Leu
-23 -20 -15 -10
AAC TTT GAG AGG ACA AGA TCA TTG CAG GAT CCT TGT AGT AAC TGC CCA 215
Asn Phe Glu Arg Thr Arg Ser Leu Gln Asp Pro Cys Ser Asn Cys Pro
-5 1 5
GCT GGT ACA TTC TGT GAT AAT AAC AGG AAT CAG ATT TGC AGT CCC TGT 263
Ala Gly Thr Phe Cys Asp Asn Asn Arg Asn Gln Ile Cys Ser Pro Cys
10 15 20 25
CCT CCA AAT AGT TTC TCC AGC GCA GGT GGA CAA AGG ACC TGT GAC ATA 311
Pro Pro Asn Ser Phe Ser Ser Ala Gly Gly Gln Arg Thr Cys Asp Ile
30 35 40
TGC AGG CAG TGT AAA GGT GTT TTC AGG ACC AGG AAG GAG TGT TCC TCC 359
Cys Arg Gln Cys Lys Gly Val Phe Arg Thr Arg Lys Glu Cys Ser Ser
45 50 55
ACC AGC AAT GCA GAG TGT GAC TGC ACT CCA GGG TTT CAC TGC CTG GGG 407
Thr Ser Asn Ala Glu Cys Asp Cys Thr Pro Gly Phe His Cys Leu Gly
60 65 70
GCA GGA TGC AGC ATG TGT GAA CAG GAT TGT AAA CAA GGT CAA GAA CTG 455
Ala Gly Cys Ser Met Cys Glu Gln Asp Cys Lys Gln Gly Gln Glu Leu
75 80 85
ACA AAA AAA GGT TGT AAA GAC TGT TGC TTT GGG ACA TTT AAC GAT CAG 503
Thr Lys Lys Gly Cys Lys Asp Cys Cys Phe Gly Thr Phe Asn Asp Gln
90 95 100 105
AAA CGT GGC ATC TGT CGA CCC TGG ACA AAC TGT TCT TTG GAT GGA AAG 551
Lys Arg Gly Ile Cys Arg Pro Trp Thr Asn Cys Ser Leu Asp Gly Lys
110 115 120
TCT GTG CTT GTG AAT GGG ACG AAG GAG AGG GAC GTG GTC TGT GGA CCA 599
Ser Val Leu Val Asn Gly Thr Lys Glu Arg Asp Val Val Cys Gly Pro
125 130 135
TCT CCA GCC GAC CTC TCT CCG GGA GCA TCC TCT GTG ACC CCG CCT GCC 647
Ser Pro Ala Asp Leu Ser Pro Gly Ala Ser Ser Val Thr Pro Pro Ala
140 145 150
CCT GCG AGA GAG CCA GGA CAC TCT CCG CAG ATC ATC TCC TTC TTT CTT 695
Pro Ala Arg Glu Pro Gly His Ser Pro Gln Ile Ile Ser Phe Phe Leu
155 160 165
GCG CTG ACG TCG ACT GCG TTG CTC TTC CTG CTG TTC TTC CTC ACG CTC 743
Ala Leu Thr Ser Thr Ala Leu Leu Phe Leu Leu Phe Phe Leu Thr Leu
170 175 180 185

CGT TTC TCT GTT GTT AAA CGG GGC AGA AAG AAA CTC CTG TAT ATA TTC 791
Arg Phe Ser Val Val Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe
190 195 200

AAA CAA CCA TTT ATG AGA CCA GTA CAA ACT ACT CAA GAG GAA GAT GGC 839
Lys Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly
205 210 215

TGT AGC TGC CGA TTT CCA GAA GAA GAA GAA GGA GGA TGT GAA CTG TGAAATGGAA
894
Cys Ser Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu
220 225 230

GTCAATAGGG CTGTTGGGAC TTTCTTGAAA AGAAGCAAGG AAATATGAGT CATCCGCTAT 954

CACAGCTTTC AAAAGCAAGA ACACCATCCT ACATAATACC CAGGATTCCC CCAACACACG 1014

TTCTTTTCTA AATGCCAATG AGTTGGCCTT TAAAAATGCA CCACTTTTTT TTTTTTTTTT 1074

GACAGGGTCT CACTCTGTCA CCCAGGCTGG AGTGCAGTGG CACCACCATG GCTCTCTGCA 1134

GCCTTGACCT CTGGGAGCTC AAGTGATCCT CCTGCCTCAG TCTCCTAGTA GCTGGAACTA 1194

CAAGGAAGGG CCACCACACC TGAATACTT TTTTGTTTTT TGTTTGGTAA AGATGGCATT 1254

TCGCCATGTT GTACAGGCTG GTCTCAAACCT CCTAGGTTCA CTTTGGCCTC CCAAAGTGCT 1314

GGGATTACAG ACATGAACTG CCAGGCCCGG CCAAATAAT GCACCACTTT TAACAGAACA 1374

GACAGATGAG GACAGAGCTG GTGATAAAAA AAAAAAAAAA A 1415

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 255 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Met Gly Asn Ser Cys Tyr Asn Ile Val Ala Thr Leu Leu Leu Val Leu
-23 -20 -15 -10

Asn Phe Glu Arg Thr Arg Ser Leu Gln Asp Pro Cys Ser Asn Cys Pro
-5 1 5

Ala Gly Thr Phe Cys Asp Asn Asn Arg Asn Gln Ile Cys Ser Pro Cys
10 15 20 25

Pro Pro Asn Ser Phe Ser Ser Ala Gly Gly Gln Arg Thr Cys Asp Ile
30 35 40

Cys Arg Gln Cys Lys Gly Val Phe Arg Thr Arg Lys Glu Cys Ser Ser
45 50 55

Thr Ser Asn Ala Glu Cys Asp Cys Thr Pro Gly Phe His Cys Leu Gly
60 65 70

Ala Gly Cys Ser Met Cys Glu Gln Asp Cys Lys Gln Gly Gln Glu Leu
75 80 85

Thr Lys Lys Gly Cys Lys Asp Cys Cys Phe Gly Thr Phe Asn Asp Gln
90 95 100 105

Lys Arg Gly Ile Cys Arg Pro Trp Thr Asn Cys Ser Leu Asp Gly Lys
110 115 120

Ser Val Leu Val Asn Gly Thr Lys Glu Arg Asp Val Val Cys Gly Pro
125 130 135

Ser Pro Ala Asp Leu Ser Pro Gly Ala Ser Ser Val Thr Pro Pro Ala
140 145 150

Pro Ala Arg Glu Pro Gly His Ser Pro Gln Ile Ile Ser Phe Phe Leu
155 160 165

Ala Leu Thr Ser Thr Ala Leu Leu Phe Leu Leu Phe Phe Leu Thr Leu
170 175 180 185

Arg Phe Ser Val Val Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe
190 195 200

Lys Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly
205 210 215

Cys Ser Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu
220 225 230

(2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 33 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

GTCAC TAGTT CTGTGCAGAA CTCCTGTGAT AAC
33

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 35 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

CACAAGATCT GGGCTCCTCT GGAGTCACAG AAATG
35

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 31 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

CAGACTAGTT CACTCTGGAG TCACAGAAAT G
31

(2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 34 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

ATAGCGGCCG CTGCCAGATT TCATCATGGG AAAC
34

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 40 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

ACAAGATCTG GGCTCCTGCG GAGAGTGTCC TGGCTCTCTC
40

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 745 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA to mRNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(vii) IMMEDIATE SOURCE:

(B) CLONE: hIgG1Fc

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 2..739

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

G GTA CCG CTA GCG TCG ACA GGC CTA GGA TAT CGA TAC GTA GAG CCC	46
Val Pro Leu Ala Ser Thr Gly Leu Gly Tyr Arg Tyr Val Glu Pro	
1 5 10 15	
AGA TCT TGT GAC AAA ACT CAC ACA TGC CCA CCG TGC CCA GCA CCT GAA	94
Arg Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu	
20 25 30	
CTC CTG GGG GGA CCG TCA GTC TTC CTC TTC CCC CCA AAA CCC AAG GAC	142
Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp	
35 40 45	
ACC CTC ATG ATC TCC CGG ACC CCT GAG GTC ACA TGC GTG GTG GTG GAC	190
Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp	
50 55 60	
GTG AGC CAC GAA GAC CCT GAG GTC AAG TTC AAC TGG TAC GTG GAC GGC	238
Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly	
65 70 75	
GTG GAG GTG CAT AAT GCC AAG ACA AAG CCG CGG GAG GAG CAG TAC AAC	286
Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn	
80 85 90 95	
AGC ACG TAC CGG GTG GTC AGC GTC CTC ACC GTC CTG CAC CAG GAC TGG	334
Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp	
100 105 110	
CTG AAT GGC AAG GAC TAC AAG TGC AAG GTC TCC AAC AAA GCC CTC CCA	382
Leu Asn Gly Lys Asp Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro	
115 120 125	
GCC CCC ATG CAG AAA ACC ATC TCC AAA GCC AAA GGG CAG CCC CGA GAA	430
Ala Pro Met Gln Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu	
130 135 140	

CCA	CAG	GTG	TAC	ACC	CTG	CCC	CCA	TCC	CGG	GAT	GAG	CTG	ACC	AAG	AAC	478
Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Asp	Glu	Leu	Thr	Lys	Asn	
145						150					155					
CAG	GTC	AGC	CTG	ACC	TGC	CTG	GTC	AAA	GGC	TTC	TAT	CCC	AGG	CAC	ATC	526
Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	Arg	His	Ile	
160					165					170					175	
GCC	GTG	GAG	TGG	GAG	AGC	AAT	GGG	CAG	CCG	GAG	AAC	AAC	TAC	AAG	ACC	574
Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	Lys	Thr	
				180					185					190		
ACG	CCT	CCC	GTG	CTG	GAC	TCC	GAC	GGC	TCC	TTC	TTC	CTC	TAC	AGC	AAG	622
Thr	Pro	Pro	Val	Leu	Asp	Ser	Asp	Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Lys	
			195					200					205			
CTC	ACC	GTG	GAC	AAG	AGC	AGG	TGG	CAG	CAG	GGG	AAC	GTC	TTC	TCA	TGC	670
Leu	Thr	Val	Asp	Lys	Ser	Arg	Trp	Gln	Gln	Gly	Asn	Val	Phe	Ser	Cys	
		210					215					220				
TCC	GTG	ATG	CAT	GAG	GCT	CTG	CAC	AAC	CAC	TAC	ACG	CAG	AAG	AGC	CTC	718
Ser	Val	Met	His	Glu	Ala	Leu	His	Asn	His	Tyr	Thr	Gln	Lys	Ser	Leu	
	225					230				235						
TCC	CTG	TCT	CCG	GGT	AAA	TGA	ACTAGT									745
Ser	Leu	Ser	Pro	Gly	Lys											
240					245											

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 245 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Val	Pro	Leu	Ala	Ser	Thr	Gly	Leu	Gly	Tyr	Arg	Tyr	Val	Glu	Pro	Arg	
1				5					10					15		
Ser	Cys	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	Leu	
		20						25					30			
Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr	
		35					40					45				
Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	Val	
	50					55					60					
Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly	Val	
	65				70					75					80	
Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr	Asn	Ser	
			85						90					95		

[illegible]

Asn Gly Lys Asp Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
115 120 125

Pro Met Gln Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
130 135 140

Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln
145 150 155 160

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Arg His Ile Ala
165 170 175

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
180 185 190

Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
195 200 205

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
210 215 220

Val	Met	His	Glu	Ala	Leu	His	Asn	His	Tyr	Thr	Gln	Lys	Ser	Leu	Ser
225					230					235					240

Leu Ser Pro Gly Lys
245